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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/048,097	06/04/2002	Andrew B Holmes	29610/206987	8312

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EXAMINER

YAMNITZKY, MARIE ROSE

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/048,097

Applicant(s)

HOLMES ET AL.

Examiner

Marie R. Yamnitzky

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2004.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19, 46 and 47 is/are pending in the application.
4a) Of the above claim(s) 16 and 17 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-15, 18, 19, 46 and 47 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date rec'd 24 Jan 2002.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

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1. This Office action is in response to applicant's election and amendment received November 01, 2004.

Applicant's amendment amends claims 3, 4, 13, 14, cancels claims 20-45, and adds claims 46 and 47.

Claims 1-19, 46 and 47 are pending.

2. Applicant's election without traverse of the invention of Group I, drawn to a method for making a polymer or oligomer, is acknowledged. Claims 1-19, 46 and 47 read on the elected invention.

3. Applicant's election with traverse of species (H) is acknowledged. The traversal is on the ground(s) that the examiner has not cited a prior art document that discloses or suggests the method of claim 1, nor provided any evidence that the species listed in the lack of unity/election of species requirement lack a common technical feature that defines a contribution over the prior art, and therefore the examiner has applied the incorrect standard for making a lack of unity of invention requirement.

This is not found persuasive because the method as claimed in independent claim 1, the sole independent claim, is generic for a wide variety of aromatic and heteroaromatic groups, and is capable of providing numerous different oligomers or polymers which have no chemical structural feature in common. For example, the method as carried out to produce species (H) would not be capable of producing any of the other species set forth in the lack of unity/election

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of species requirement. The election of species requirement was set forth following the guidelines set forth in MPEP 1850 regarding Markush Practice. While the method claims are not Markush claims, the generic language has the same effect as Markush language in encompassing a variety of chemical alternatives.

Further, although it is the examiner's understanding that the citation of a prior art document is not necessary to show lack of unity for the election of species requirement, applicant will note that the prior art applied in this Office action demonstrates that the method as claimed in claim 1 is not novel.

The requirement is still deemed proper and is therefore made FINAL.

Given that the director groups and/or the substituent groups may be converted to reactive groups that participate in polymerization, claims 1-15, 18, 19, 46 and 47 reads on the elected species. (In making the requirement, the examiner indicated that claims 16 and 17 may read on the species (H). Upon further consideration, claims 16 and 17 do not read on the elected species because the elected species does not comprise an arylene vinylene repeat unit.)

4. Claims 16 and 17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the election of species requirement in the reply filed on November 01, 2004.

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5. Claims 3, 13-15, 18, 19 and 46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The two occurrences of “and” in the last line of claims 3 and 46 make it unclear as to whether “triflate and amide” are a single member of the Markush group (i.e. “triflate and amide” are, together, one possible substituent group).

Claim 13, with claims 14, 15, 18 and 19 dependent directly or indirectly therefrom: There is no antecedent basis for “the second substituent group” as recited in claim 13. Claim 13 depends from claim 1, which only provides antecedent basis for a first substituent group.

Claim 18, with claim 19 dependent therefrom: Proper antecedent basis is lacking for “each substituent group” as recited in claim 18 as dependent ultimately from claim 1. Claim 1 only provides antecedent basis for a first substituent group.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002

do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

7. Claims 1, 3, 5, 10, 13 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by McCullough et al. in *J. Chem. Soc., Chem. Commun.* (1992), pp. 70-72.

See the whole article. In particular, see Scheme 1 on page 71.

The prior art discloses a method of making a polymer in which a heteroaromatic group, which is substituted with two substituents (first and second director groups), is metalated at a first position and further reacted so as to provide a substituent at the first position.

Metalation at the first position is achieved by the use of lithium diisopropylamide, which is an organo-lithium.

The substituent at the first position is MgBr, which is a halide and is a reactive group that participates in polymerization.

One of the director groups is Br and one of the director groups is an alkyl group. The director group which is Br is also a reactive group that participates in polymerization.

8. Claims 1-3, 5-8, 10-14 and 46 are rejected under 35 U.S.C. 102(b) as being anticipated by Kreuder et al (WO 96/29356) or rejected under 35 U.S.C. 102(e) as being anticipated by Kreuder et al. (US 6,114,490).

The two Kreuder references are in the same patent family. The specification of Kreuder's U.S. patent is considered by the examiner to represent an English language translation of the corresponding portion of the German language WO publication.

In the U.S. patent, see column 3, lines 6-63, c. 4, l. 66-c. 5, l. 8, c. 5, l. 27-c. 6, l. 40, and c. 8, l. 32-c. 13, l. 2.

The reaction scheme shown in columns 9-12 of the U.S. patent is shown on pages 16-18 of the WO publication.

The prior art disclose a method of making an oligomer and a polymer in which an aromatic (phenylene) group, which is substituted with four substituents, is metalated at first and second positions so as to provide a substituent at each of the first and second positions (e.g. see (E)→(F) in columns 9-10 of the US patent and on p. 16 of the WO publication). The substituents at the first and second positions are converted to reactive groups that are para to one another (e.g. see (F)→(G)), and that participate in polymerization.

With respect to claims 3 and 46, the substituent groups in the case of (F) are B(OH)₂. The prior art also teaches that distannanes can be formed from (E) and used as starting compounds for polymers of the invention (see c. 12, l. 65-c. 13, l. 2 in the US patent).

With respect to claim 5, metalation is achieved by the use of an organo-lithium (BuLi).

The language of claim 1 does not restrict the "first position" at which metalation occurs from being the same as the position of the first or second director groups. Accordingly, in intermediate (E) as shown in column 9 of the US patent, for example, both of the Br substituents can be considered to meet the limitations of the first and second director groups, or both of the

OR substituents can be considered to meet the limitations of the first and second director groups, or one of the Br substituents and one of the OR substituents can be considered to meet the limitations of the first and second director groups.

The limitations of claims 6-8 are met by considering the OR substituents of intermediate (E) as the first and second director groups.

The limitations of claim 10 are met by considering one of the Br substituents and one of the OR substituents of intermediate (E) as the first and second director groups.

The limitations of claim 11 are met by considering both of the Br substituents, or both of the OR substituents, as the first and second director groups.

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 3, 4, 8, 9, 15, 18, 19, 46 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kreuder et al (WO 96/29356) or Kreuder et al. (US 6,114,490) as applied to claims 1-3, 5-8, 10-14 and 46 above, and for the further reasons set forth below.

With respect to claims 8 and 9, considering the OR substituents of intermediate (E) as the first and second director groups, the prior art anticipates the method of claim 8 in which the first and second director groups are alkoxy groups. The prior art also discloses various other

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possibilities for the substituents at the positions of the OR substituents of intermediate (E) which render obvious the method of claims 8 and 9. For example, based on the prior art teachings at c. 3, l. 33-44 of the US patent, it would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to utilize a substituted phenylene group having an alkoxyalkyl, a halide, a haloalkyl, a carboxylic acid ester or a sulphurylalkyl group, such as SO₂-tBu, in place of one or both of the alkoxy groups of intermediate (E).

With respect to claims 3, 4, 15, 18, 19, 46 and 47, the prior art teaches that the polymers may be polymerized by various methods other than the method of Scheme 1. It would have been within the level of ordinary skill of a worker in the art at the time of the invention to determine suitable substituent/director groups capable of participating in polymerization and/or capable of being converted to suitable reactive groups for participation in polymerization based on the method of polymerization to be utilized to provide the oligomers and polymers taught by Kreuder et al.

11. Miscellaneous:

In the first line of claim 4, one occurrence of "first" should be deleted. The error was introduced by applicant's amendment received November 01, 2004.

12. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

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The current fax number for Art Unit 1774 is (703) 872-9306 for all official faxes.
(Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY
January 24, 2005



MARIE YAMNITZKY
PRIMARY EXAMINER

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